Contents

Summary of Advances Reported at the ISOPOW-V Conference . 1
M. KAREL, J. CHRISTIAN & P. FITO

Basic Physical Chemistry and Links Between Hydration and Solute Interactions 13
T. H. LILLEY (UK)

The Role of Conformation on the Thermodynamics and Rheology of Aqueous Solutions of Carbohydrate Polymers 27
A. CESÀRO (Italy)

Computer Modeling Studies of the Interaction of Water with Carbohydrates 43
R. K. SCHMIDT, K. TASAKI & J. W. BRADY (USA)

Protein-Stabilized Emulsions 59
E. DICKINSON (UK)

Water in Casein Gels; How to Get it Out or Keep it In . . 75
T. VAN VLIET & P. WALSTRA (The Netherlands)

Theories of Liquid–Glass Transition 89
J. PEREZ (France)

Liquid Fragility and the Glass Transition in Water and Aqueous Solutions 115
C. A. ANGELL, R. D. BRESSEL, J. L. GREEN, H. KANNO, M. OGUNI & E. J. SARE (USA)

Water and the Glass Transition—Dependence of the Glass Transition on Composition and Chemical Structure: Special Implications for Flour Functionality in Cookie Baking 143
L. SLADE & H. LEVINE (USA)

Water Diffusion and Sorption in Amorphous Macromolecular Systems and Foods 189
N. A. PEPPAS & L. BRANNON-PEPPAS (USA)

NMR Imaging in the Study of Diffusion of Water in Foods . 211
M. J. McCARTHY (USA), D. LASSEUX (France) &
J. E. MANEVAL (USA)

Lipid Type and Location of the Relative Humidity Gradient Influence on the Barrier Properties of Lipids to Water Vapor . 225
O. FENNEMA, I. G. DONHOWE & J. J. KESTER (USA)

Changes in Rheological Properties of Gliadin as a Function of Temperature and Moisture: Development of a State Diagram . 241
H. MADEKA & J. L. KOKINI (USA)

Mechanical Properties of Frozen Model Solutions . . . 253
G. BLOND (France)

Water Activity and Food Polymer Science: Implications of State on Arrhenius and WLF Models in Predicting Shelf Life . . 271
K. A. NELSON & T. P. LABUZA (USA)

Influence of the Low-Moisture State on pH and its Implication for Reaction Kinetics 291
L. N. BELL & T. P. LABUZA (USA)

Modelling of Vacuum Osmotic Dehydration of Food . . . 313
P. FITO (Spain)

Drying Modelling and Water Diffusivity in Carrots and Potatoes 329
A. MULET (Spain)

The Role of Hydration in Lysozyme Structure and Activity: Relevance in Protein Engineering and Design 349
P. L. POOLE (UK)

The Role of Water in Biomembrane Structures 367
D. CHAPMAN (UK)

Mechanisms Controlling Compatible Solute Accumulation: A Consideration of the Genetics and Physiology of Bacterial Osmoregulation 381
I. R. BOOTH, B. POURKOMAILIAN, D. McLAGGAN &
S.-P. KOO (UK)

Yeast Resistance to High Levels of Osmotic Pressure: Influence of Kinetics 399
P. GERVAIS & P. A. MARECHAL (France)

Specific Solute Effects with Special Reference to *Staphylococcus aureus* 409
J. CHIRIFE (Argentina)

Further Developments in the Utilization of Hurdle Technology for Food Preservation 421
L. LEISTNER (Germany)

Combined Methods for the Preservation of Foods in Latin America and the CYTED-D Project 433
J. M. AGUILERA (CHILE) & J. CHIRIFE (Argentina)

IMF: An Iberoamerican Cooperative Project 445
E. PARADA-ARIAS (Mexico)

Bacterial Ice-Nucleation Activity and its Application to Freeze Concentration of Fresh Foods for Modification of their Properties 453
M. WATANABE & S. ARAI (Japan)

Antifreeze Proteins 475
P. J. LILLFORD & C. B. HOLT (UK)

The Glass Transition in the Freezing Process 483
D. S. REID, W. KERR & J. HSU (USA)

Effect of Water Vapor on the Transport Properties of Oxygen through Polyamide Packaging Materials 495
R. J. HERNANDEZ (USA)

Control of Water in Foods During Storage 509
C. H. MANNHEIM (Israel), J. X. LIU &
S. G. GILBERT (USA)